CSE341 Quiz 4

Spring'24

1. Alice, after realizing that she's lost in the class, panics and decides to buy a laser printer in order to print out all the course notes. Suppose that she bought a laser printer that produces up to 45 pages per minute, where each page consists of 5000 characters. The manual for the laser printer states that the system uses interrupt-driven I/O by raising an interrupt for every character. If each interrupt takes 50 microseconds to process, **determine** how much CPU time will be spent processing interrupts **(in %)**? Assume that the CPU takes 1 minute to print all the 45 pages. 6

2. Alice has an option of switching her laser printer's system to a polling-driven implementation instead. A polling-driven implementation takes up 15% of the CPU time to process I/O. Should Alice switch to using polling instead of interrupts? Explain why or why not. 4

3. You have an 80286 where the IOPL bits are set to 01. Again, you have a program "X" assigned to "Privilege Level 2". **Comment** on whether the I/O device can send data to the microprocessor for Program X. 5

4. Draw a timing diagram for a memory read instruction. 5